

CLAIMS

What is claimed is:

1. A ramp system for forming ramp assemblies of selectively variable configurations for providing aerial lift to users of skates, skateboards, bicycles and the like comprising ramp modules of at least two different configurations, one of said at least two ramp module configurations being an inclined ramp module having an inclined upper support surface supported on generally triangularly shaped side walls substantially over its length, said inclined ramp module having an end wall at one end of said side walls and at the upper end of said inclined surface, another of said at least two module configurations being a straight ramp module having a generally horizontal, planar upper support surface supported on generally rectangularly shaped side walls substantially over its length, said straight ramp module having end walls at opposite ends of said side walls and said straight support surface, said inclined ramp module having a bottom side engageable with a ground surface and alternatively adapted to be supported upon said planar support surface of said straight ramp module in a stacked relationship, said straight ramp module having a bottom side engageable with a ground surface, said end wall of said inclined ramp module adapted to be secured to one of said end walls of said straight ramp module for end-to-end assembly.

2. The ramp assembly of claim 1 with said bottom side of said straight ramp module adapted to be supported on said planar support surface of another of said straight ramp modules in a stacked relationship.

3. The ramp assembly of claim 1 with either of said end walls at the ends of said straight ramp module adapted to be secured to the opposite end wall of another of said straight ramp modules and to said end wall of said inclined ramp module for end-to-end assembly.

4. The ramp system of claim 1 with said inclined ramp module being of a generally hollow structure with said triangularly shaped side walls and end wall being of a relatively thin wall thickness, the lower extremities of said triangularly shaped side walls and end wall defining the bottom side of said inclined ramp module, said inclined ramp module having a plurality of longitudinally and transversely extending internal ribs of a generally thin wall thickness, at least some of said internal ribs having at least a bottom portion extending downwardly to substantially the same location as the extremities of said triangularly shaped side walls and said end wall to provide further support for said inclined ramp module at said bottom side.

5. The ramp system of claim 1 with said straight ramp module being of a generally hollow structure with said rectangularly shaped side walls and said end walls at opposite ends being of a relatively thin wall thickness, the lower extremities of said rectangularly shaped side walls and said end walls defining the bottom side of said straight ramp module, said straight ramp module having a plurality of longitudinally and transversely extending internal ribs of a generally thin wall thickness, at least some of said internal ribs having at least a bottom portion extending downwardly to substantially the same location as the extremities of said rectangularly shaped side walls and said end wall to provide further support for said straight ramp module at said bottom side.

6. The ramp system of claim 4 with said straight ramp module being of a generally hollow structure with said rectangularly shaped side walls and said end walls at opposite ends being of a relatively thin wall thickness, the lower extremities of said rectangularly shaped side walls and said end walls defining the bottom side of said straight ramp module, said straight ramp module having a plurality of longitudinally and transversely extending internal ribs of a generally thin wall thickness, at least some of said internal ribs having at least a bottom portion extending downwardly to substantially the same location as the extremities of said rectangularly side walls and said end wall to provide further support for said straight ramp module at said bottom side.

7. The ramp system of claim 1 wherein said inclined and straight upper support surfaces have a textured, roughened finish to inhibit slippage.

8. The ramp system of claim 1 wherein said ramp modules of at least two different configurations are made from a high density plastic such as a high density polyethylene.

9. The ramp system of claim 1 including a foot member which is a strip-like generally U-shaped resilient structure adapted to be located on edges at

said bottom side of said inclined ramp module and said bottom side of said straight module for contacting the ground surface to inhibit slippage,

said U-shaped structure having a channel portion with side sections spaced to accept said edges of varying thickness, said channel portion having an opening at its upper end with said side sections being located proximate to each other to at least partially close said opening and adapted to be resiliently moved apart when said edges are moved into said channel portion and to close to resiliently grip said edges to retain said foot member to said edges.

10. The ramp system of claim 4 including a foot member which is a strip-like generally U-shaped resilient structure adapted to be located on edges at said bottom side of said inclined ramp module and said bottom side of said straight module for contacting the ground surface to inhibit slippage,

said foot member adapted to be applied to the edges of said lower extremities of said triangularly shaped side walls and to the edges at said bottom portion of said some of said ribs of said inclined ramp module,

said U-shaped structure having a channel portion with side sections spaced to accept said edges of varying thickness of said lower extremities of said triangularly shaped side walls and said some of said ribs, said channel portion having an opening at its upper end with said side sections being located proximate to each other to at least partially close said opening and adapted to be resiliently moved apart when said edges are moved into said channel portion and to close to resiliently grip said edges to retain said foot member to said edges.

11. The ramp system of claim 5 including a foot member which is a strip-like generally U-shaped resilient structure adapted to be located on edges at said bottom side of said inclined ramp module and said bottom side of said straight module for contacting the ground surface to inhibit slippage, said foot member adapted to be applied to the edges of said lower extremities of said rectangularly shaped side walls and to the edges at said bottom portion of said some of said ribs of said straight ramp module, said U-shaped structure having a channel portion with side sections spaced to accept said edges of varying thickness of said lower extremities of said rectangularly shaped side walls and said some of said ribs, said channel portion having an opening at its upper end with said side sections being located proximate to each other to at least partially close said opening and adapted to be resiliently moved apart when said edges are moved into said channel portion and to close to resiliently grip said edges to retain said foot member to said edges.

12. The ramp system of claim 1 including first attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for end-to-end alignment, said first attachment means comprising at least one T-shaped protrusion and at least one T-shaped channel groove on said end wall of said inclined ramp module and on said end wall of said straight ramp module with the same spacing between each, said T-shaped protrusion on one of said ramp modules adapted to be slidingly, matingly moved into said T-shaped channel groove on another of said ramp modules with said T-shaped protrusion on said another of said ramp modules being slidingly, matingly moved into said T-shaped channel groove on said one of said ramp modules.

13. The ramp system of claim 12 including second attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for side-by-side alignment.

14. The ramp system of claim 13 with said second attachment means comprising at least one T-shaped protrusion and at least one T-shaped channel groove on said triangularly shaped side walls of said inclined ramp module and on said rectangularly shaped side walls of said straight ramp module with the same spacing between each, said T-shaped protrusion on one of said inclined ramp modules adapted to be slidingly, matingly moved into said T-shaped channel groove on another of said inclined ramp modules with said T-shaped protrusion on said another of said inclined ramp modules being slidingly, matingly moved into said T-shaped channel groove on said one of said inclined ramp modules, said T-shaped protrusion on one of said straight ramp modules adapted to be slidingly, matingly moved into said T-shaped channel groove on another of said straight ramp modules with said T-shaped protrusion on said another of said straight ramp modules being slidingly, matingly moved into said T-shaped channel groove on said one of said straight ramp modules.

15. The ramp system of claim 1 including first attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for end-to-end alignment, said first attachment means comprising at least one T-shaped protrusion and at least one T-shaped channel groove on said end wall of said inclined ramp module and on said end wall of said straight ramp module with the same spacing between each, said T-shaped protrusion on one of said ramp modules adapted to be slidably, matingly moved into said T-shaped channel groove on another of said ramp modules with said T-shaped protrusion on said another of said ramp modules being slidably matingly moved into said T-shaped channel groove on said one of said ramp modules, said T-shaped protrusions having a configuration tapering from a large protrusion section on its lower end to a small protrusion section at its upper end, said T-shaped channel groove having a configuration tapering from a small groove section at its lower end to a large groove section at its upper,

said large protrusion section at the lower end of said T-shaped protrusion adapted to be in said small groove section at the lower end of said T-shaped channel groove with a relatively close tolerance fit.

16. The ramp system of claim 15 including second attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for side-by-side alignment, said second attachment means comprising at least one T-shaped protrusion and at least one T-shaped channel groove on said triangularly shaped side walls of said inclined ramp module and on said rectangularly shaped side walls of said straight ramp module with the same spacing between each, said T-shaped protrusion on one of said inclined ramp modules adapted to be slidingly, matingly moved into said T-shaped channel groove on another of said inclined ramp modules with said T-shaped protrusion on said another of said inclined ramp modules being slidingly, matingly moved into said T-shaped channel groove on said one of said inclined ramp modules, said T-shaped protrusion on one of said straight, ramp modules adapted to be slidingly, matingly moved into said T-shaped channel groove on another of said straight ramp modules with said T-shaped protrusion on said another of said straight ramp modules being slidingly, matingly moved into said T-shaped channel groove on said one of said straight ramp modules, said T-shaped protrusion having a configuration tapering from a large protrusion section on its lower end to a small protrusion section at its upper end,

said T-shaped channel groove having a configuration tapering from a small groove section at its lower end to a large groove section at its upper,

said large protrusion section at the lower end of said T-shaped protrusion adapted to be in said smaller groove section at the lower end of said T-shaped channel groove with a relatively close tolerance fit.

17. The ramp system of claim 1 including first attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for end-to-end alignment and second attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for

side-by-side alignment, said first attachment means comprising at least one T-shaped protrusion and at least one T-shaped channel groove on said end wall of said inclined ramp module and on said end wall of said straight ramp module with the same spacing between each, said T-shaped protrusion on one of said ramp modules adapted to be slidingly, matingly moved into said T-shaped channel groove on another of said ramp modules with said T-shaped protrusion on said another of said ramp modules being slidingly, matingly moved into said T-shaped channel groove on said one of said ramp modules, said second attachment means comprising at least one T-shaped protrusion and at least one T-shaped channel groove on said triangularly shaped side walls of said inclined ramp module and on said rectangularly shaped side walls of said straight ramp module, said T-shaped protrusion on one of said inclined ramp modules adapted to be slidingly, matingly moved into said T-shaped channel groove on another of said inclined ramp modules with said T-shaped protrusion on said another of said inclined ramp modules being slidingly, matingly moved into said T-shaped channel groove on said one of said inclined ramp modules, said T-shaped protrusion on one of said straight, ramp modules adapted to be slidingly, matingly moved into said T-shaped channel groove on another of said straight ramp modules with said T-shaped protrusion on said another of said straight ramp modules being slidingly, matingly moved into said T-shaped channel groove on said one of said straight ramp module.

18. The ramp system of claim 13 with said first attachment means being operable with said second attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for end-to-side alignment.

19. The ramp system of claim 1 wherein the angle of inclination of said inclined upper support surface on said inclined ramp module is about 19°.

20. The ramp system of claim 1 formed in a stacked relationship with a first said inclined ramp module at the entrance at the ground surface connected end-to-end with one said straight ramp module at the ground surface, and including a second inclined ramp module supported on said planar support surface on said straight ramp module with said inclined surfaces of said first and second inclined ramp modules being in line, said ramp system including first attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for end-to-end alignment, said first attachment means comprising at least one T-shaped protrusion and at least one T-shaped channel groove on said end wall of said inclined ramp module and on said end wall of said straight ramp module with the same spacing between each, said T-shaped protrusion on one of said ramp modules adapted to be slidably, matingly moved into said T-shaped channel groove on another of said ramp modules with said T-shaped protrusion on said another of said ramp modules being slidably matingly moved into said T-shaped channel groove on said one of said ramp modules, said T-shaped protrusions having a configuration tapering from a large protrusion section on its lower end to a small protrusion section at its upper end,

said T-shaped channel groove having a configuration tapering from a small groove section at its lower end to a large groove section at its upper end,

said large protrusion section at the lower end of said T-shaped protrusion adapted to be in said small groove section at the lower end of said T-shaped channel groove with a relatively close tolerance fit and with a peripheral gap at the upper ends of said T-shaped protrusion and said T-shaped channel groove,

said T-shaped protrusion being open at its lower end, connecting means for

connecting said second inclined ramp module to said straight ramp module when in a stacked assembly, said connecting means including a generally T-shaped connector having a T-shaped opening at its lower end, said T-shaped opening adapted to fit over the upper end of the T-shaped protrusion on said straight ramp module,

the upper end of said T-shaped connector adapted to fit within the opening at the lower end of said T-shaped protrusion whereby said second inclined ramp module and said straight ramp module will be secured together in the stacked condition.

21. The ramp system of claim 1 with said upper end of said T-shaped connector having a stop position adapted to engage said lower end of said T-shaped protrusion to provide a preselected, limited amount of movement of said upper end of said T-shaped connector within said lower end of said T-shaped protrusion.

22. The ramp system of claim 1 formed in a stacked relationship with a first said inclined ramp module at the entrance at the ground surface connected end-to-end with one said straight ramp module at the ground surface, and including a second inclined ramp module supported on said planar support surface on said straight ramp module with said inclined surfaces of said first and second inclined ramp modules being in line, said ramp system including first attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for end-to-end alignment, connecting means for connecting said second inclined ramp module to said straight ramp module when in a stacked assembly;

said inclined ramp modules having a generally resilient lip structure extending from the lower end of said inclined surfaces,

said lip structure being of a preselected length to locate said lip structure of said second inclined ramp module proximate to the upper end of said inclined surface of said first inclined ramp module to provide a generally smooth transition between said inclined surfaces.

23. A ramp system for forming ramp assemblies of selectively variable configurations for providing aerial lift to users of skates, skateboards, bicycles and the like comprising ramp modules of at least two different configurations, one of said at least two ramp module configurations being an inclined ramp module having an inclined upper support surface supported on generally triangularly shaped side walls substantially over its length, said inclined ramp module having an end wall at one end of said side walls and at the upper end of said inclined surface, another of said at least two module configurations being a straight ramp module having a generally horizontal, planar upper support surface supported on generally rectangularly shaped side walls substantially over its length, said straight ramp module having end walls at opposite ends of said side walls and said straight support surface, said inclined ramp module having a bottom side engageable with a ground surface and alternatively adapted to be supported upon said planar support surface of said straight ramp module in a stacked relationship, said straight ramp module having a bottom side engageable with a ground surface, said end wall of said inclined ramp module adapted to be located adjacent to one of said end walls of said straight ramp module for end-to-end assembly.

the longitudinal length of said triangularly shaped side walls of said inclined ramp module and the longitudinal length of said straight ramp module being substantially the same and the transverse width of said inclined ramp module and said straight ramp module being substantially the same to facilitate location of said bottom side of said inclined ramp module in a stacked aligned location upon said planar support surface of said straight ramp module,

said end wall of said inclined ramp module being substantially of the same size as said end walls of said straight ramp module to facilitate end-to-end location and alignment.

24. The ramp system of claim 23 formed in a stacked relationship with a first said inclined ramp module at the entrance at the ground surface connected end-to-end with one said straight ramp module at the ground surface, and including a second inclined ramp module supported on said planar support surface on said straight ramp module with said inclined surfaces of said first and second inclined ramp modules being in line, said ramp system including first attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for end-to-end alignment, said first attachment means comprising at least one T-shaped protrusion and at least one T-shaped channel groove on said end wall of said inclined ramp module and on said one end wall of said straight ramp module with the same spacing between each, said T-shaped protrusion on one of said ramp modules adapted to be slidably, matingly moved into said T-shaped channel groove on another of said ramp modules with said T-shaped protrusion on said another of said ramp modules being slidably matingly moved into said T-shaped channel groove on said one of said ramp modules, said T-shaped protrusions having a configuration tapering from a large protrusion section on its lower end to a small protrusion section at its upper end,

said T-shaped channel groove having a configuration tapering from a small groove section at its lower end to a large groove section at its upper end,

said large protrusion section at the lower end of said T-shaped protrusion adapted to be in said small groove section at the lower end of said T-shaped channel groove with a relatively close tolerance fit and with a peripheral gap at the upper ends of said T-shaped protrusion and said T-shaped channel groove,

said T-shaped protrusion being open at its lower end,

connecting means for connecting said second inclined ramp module to said straight ramp module when in a stacked assembly, said connecting means including a generally T-shaped connector having a T-shaped opening at its lower end, said T-shaped opening adapted to fit over the upper end of the T-shaped protrusion on said straight ramp module,

the upper end of said T-shaped connector adapted to fit within the opening at the lower end of said T-shaped protrusion whereby said second inclined ramp module and said straight ramp module will be secured together in the stacked condition.

25. The ramp system of claim 23 with said inclined ramp module being of a generally hollow structure with said triangularly shaped side walls and end wall being of a relatively thin wall thickness, the lower extremities of said triangularly shaped side walls and end wall defining the bottom side of said inclined ramp module, said inclined ramp module having a plurality of longitudinally and transversely extending internal ribs of a generally thin wall thickness, at least some of said internal ribs having at least a bottom portion extending downwardly to substantially the same location as the extremities of said triangularly shaped side walls and said end wall to provide further support for said inclined ramp module at said bottom side, said straight ramp module being of a generally hollow structure with said rectangularly shaped side walls and said end walls at opposite ends being of a relatively thin wall thickness, the lower extremities of said rectangularly shaped side walls and said end walls defining the bottom side of said straight ramp module, said straight ramp module having a plurality of longitudinally and transversely extending internal ribs of a generally thin wall thickness, at least some of said internal ribs having at least a bottom portion extending downwardly to substantially the same location as the extremities of said rectangularly shaped side walls and said end wall to provide further support for said straight ramp module at said bottom side.

26. The ramp system of claim 23 including a foot member which is a strip-like generally U-shaped resilient structure adapted to be located on edges at said bottom side of said inclined ramp module and said bottom side of said straight module for contacting the ground surface to inhibit slippage,

said foot member adapted to be applied to the edges of said lower extremities of said triangularly shaped side walls and to the edges at said bottom portion of said some of said ribs of said inclined ramp module and to the edges of said lower extremities of said rectangularly shaped side walls and to the edges at said bottom portion of said some of said ribs of said straight ramp module,

said U-shaped structure having a channel portion with side sections spaced to accept said edges of varying thickness of said lower extremities of said triangularly shaped side walls of said inclined ramp module and said some of said ribs of said inclined ramp module and of said straight ramp module, said channel portion having an opening at its upper end with said side sections being located proximate to each other to at least partially close said opening and adapted to be resiliently moved apart when said edges of said inclined ramp module and of said straight ramp module are moved into said channel portion and to close to resiliently grip said edges to retain said foot member to said edges.

27. A ramp system for forming ramp assemblies of selectively variable configurations for providing aerial lift to users of skates, skateboards, bicycles and the like comprising ramp modules of at least two different configurations, one of said at least two ramp module configurations being an inclined ramp module having an inclined upper support surface supported on generally triangularly shaped side walls substantially over its length, said inclined ramp module having an end wall at one end of said side walls and at the upper end of said inclined surface, another of said at least two module configurations being a straight ramp module having a generally horizontal, planar upper support surface supported on generally rectangularly shaped side walls substantially over its length, said straight ramp module having end walls at opposite ends of said side walls and said straight support surface, said inclined ramp module having a bottom side engageable with a ground surface and alternatively adapted to be supported upon said planar support surface of said straight ramp module in a stacked relationship, said straight ramp module having a bottom side engageable with a ground surface and alternatively adapted to be supported on said planar support surface of another of said straight ramp modules in a stacked relationship, said end wall of said inclined ramp module adapted to be secured to one of said end walls of said straight ramp module for end-to-end assembly, either one of said end walls at one end of said straight ramp module adapted to be secured to the opposite end wall of another of said straight module for end-to-end assembly.

28. The ramp system of claim 27 including first attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for end-to-end alignment, said first attachment means comprising at least one T-shaped protrusion and at least one T-shaped channel groove on said end wall of said inclined ramp module and on said end wall of said straight ramp module with the same spacing between each, said T-shaped protrusion on one of said ramp modules adapted to be slidingly, matingly moved into said T-shaped channel groove on another of said ramp modules with said T-shaped protrusion on said another of said ramp modules being slidingly matingly moved into said T-shaped channel groove on said one of said ramp modules, said T-shaped protrusions having a configuration tapering from a large protrusion section on its lower end to a small protrusion section at its upper end, said T-shaped channel groove having a configuration tapering from a small groove section at its lower end to a large groove section at its upper,

said large protrusion section at the lower end of said T-shaped protrusion adapted to be in said small groove section at the lower end of said T-shaped channel groove with a relatively close tolerance fit.

29. The ramp system of claim 27 formed in a stacked relationship with a first said inclined ramp module at the entrance at the ground surface connected end-to-end with one said straight ramp module at the ground surface, and including a second inclined ramp module supported on said planar support surface on said straight ramp module with said inclined surfaces of said first and second inclined ramp modules being in line, said ramp system including first attachment means for connecting selected ones of said inclined ramp modules and said straight ramp modules for end-to-end alignment, said first attachment means comprising at least one T-shaped protrusion and at least one T-shaped channel groove on said end wall of said inclined ramp module and on said one end wall of said straight ramp module with the same spacing between each, said T-shaped protrusion on one of said ramp modules adapted to be slidingly, matingly moved into said T-shaped channel groove on another of said ramp modules with said T-shaped protrusion on said another of said ramp modules being slidingly matingly moved into said T-shaped channel groove on said one of said ramp modules, said T-shaped protrusions having a configuration tapering from a large protrusion section on its lower end to a small protrusion section at its upper end,

said T-shaped channel groove having a configuration tapering from a small groove section at its lower end to a large groove section at its upper end,

said large protrusion section at the lower end of said T-shaped protrusion adapted to be in said small groove section at the lower end of said T-shaped channel groove with a relatively close tolerance fit and with a peripheral gap at the upper ends of said T-shaped protrusion and said T-shaped channel groove,

said T-shaped protrusion being open at its lower end, connecting means for

connecting said second inclined ramp module to said straight ramp module when in a stacked assembly, said connecting means including a generally T-shaped connector having a T-shaped opening at its lower end, said T-shaped opening adapted to fit over the upper end of the T-shaped protrusion on said straight ramp module,

the upper end of said T-shaped connector adapted to fit within the opening at the lower end of said T-shaped protrusion whereby said second inclined ramp module and said straight ramp module will be secured together in the stacked condition.

30. A ramp system for forming ramp assemblies of selectively variable configurations for providing aerial lift to users of skates, skateboards, bicycles and the like comprising at least one ramp module of a configuration being an inclined ramp module having an inclined upper support surface supported on generally triangularly shaped side walls substantially over its length, said inclined ramp module having an end wall at one end of said side walls and at the upper end of said inclined surface, said inclined ramp module having a bottom side engageable with a ground surface, said end wall of said inclined ramp module adapted to be secured to an end wall of another ramp module for end-to-end assembly, attachment means for selectively connecting said inclined ramp module and said other ramp module for end-to-end alignment, said attachment means comprising at least one T-shaped protrusion on one of said end wall of said inclined ramp module and an end wall of said other ramp module and at least one T-shaped channel groove on the other one of said end wall of said inclined ramp module and the end wall of said other ramp module, said T-shaped protrusion adapted to be slidingly, matingly moved into said T-shaped channel groove.

31. The ramp system of claim 30 with said inclined ramp module being of a generally hollow structure with said triangularly shaped side walls and end wall being of a relatively thin wall thickness, the lower extremities of said triangularly shaped side walls and end wall defining the bottom side of said inclined ramp module, said inclined ramp module having a plurality of longitudinally and transversely extending internal ribs of a generally thin wall thickness, at least some of said internal ribs having at least a bottom portion extending downwardly to substantially the same location as the extremities of said triangularly shaped side walls and said end wall to provide further support for said inclined ramp module at said bottom side.